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| APPLICATION NO.                | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|--------------------------------|-------------|----------------------|---------------------|------------------|
| 09/841,956                     | 04/25/2001  | Bruce A. Smith       | 6169-187            | 6183             |
| 40987                          | 7590        | 09/09/2004           | EXAMINER            |                  |
| AKERMAN SENTERFITT             |             |                      | LERNER, MARTIN      |                  |
| P. O. BOX 3188                 |             |                      | ART UNIT            |                  |
| WEST PALM BEACH, FL 33402-3188 |             |                      | PAPER NUMBER        |                  |
|                                |             |                      | 2654                |                  |

DATE MAILED: 09/09/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

### Application No.

09/841,956

### Applicant(s)

SMITH, BRUCE A.

### Examiner

Martin Lerner

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

### A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1 to 23 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 10 to 14 is/are allowed.
- 6) ☒ Claim(s) 1 to 9 and 15 to 23 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_.

## DETAILED ACTION

### *Specification*

1. The disclosure is objected to because of the following informalities:

On page 8, line 17, "memory devices 115" should be --memory devices 250--.

(Figure 2)

On page 9, line 5, "integrate" should be --integrated--.

On page 9, line 28, "proximity detector 260" should be --proximity detector 120--.

(Figure 2)

Appropriate correction is required.

### *Claim Rejections - 35 USC § 102*

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 7, 9, 21, and 23 are rejected under 35 U.S.C. 102(b) as being anticipated by *Hawker et al.* ('949).

Regarding independent claims 7 and 21, *Hawker et al.* ('949) discloses a method and computer program, comprising:

“detecting a position of an audio speech source relative to said audio device” – in a preferred embodiment, a wireless communication terminal 10 has a proximity detector that produces signals depending upon the proximity of the terminal to the user (column 4, line 51 to column 5, line 6: Figures 1 and 3); a user is “an audio speech source” positioned relative to terminal 10, which is “said audio device”;

“generating proximity data corresponding to said detected position” – proximity detector automatically activates mode switch 46 depending on the proximity of the terminal to the user; moving the terminal closer to the user will cause the proximity detector to activate mode switch 46, thus setting electronic switch 50 to handset position and putting the terminal in handset mode; moving the terminal away from the user causes the opposite to occur, and the terminal is put in handsfree mode (column 4, line 51 to column 5, line 6: Figures 1 and 3);

“selectively adjusting an output level of said audio device based upon said proximity data” – to ensure good audio quality while the terminal is in handset mode with the terminal loosely or tightly coupled to the user's ear, or while the terminal is in handsfree mode, the output audio level as a function of frequency must be adjusted for each mode so as to fall within a certain range (column 5, lines 7 to 29: Figures 1 and 3).

Regarding claims 9 and 23, *Hawker et al. ('949)* discloses a transducer provides the user with a flat frequency response in handsfree mode; handset mode reduces the relative amplitudes of lower frequency components; in addition, appropriate amounts of amplification and electronic equalization may be employed to achieve the required

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output audio level over the desired frequency range in handset mode or in handsfree mode (column 5, lines 7 to 29: Figures 1 and 3).

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1 to 3, 6, 8, 15 to 17, 20, and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Hawker et al.* ('949) in view of *Uehara*.

Concerning independent claims 1 and 15, *Hawker et al.* ('949) discloses a method and computer program, comprising:

"receiving a user spoken utterance from an audio speech source" – a wireless communication terminal 10 receives speech from a user, implicitly (Figure 1);

"detecting a position of said audio source relative to said audio device" — in a preferred embodiment, a wireless communication terminal 10 has a proximity detector that produces signals depending upon the proximity of the terminal to the user (column 4, line 51 to column 5, line 6: Figures 1 and 3); a user is "an audio speech source" positioned relative to terminal 10, which is "said audio device";

"generating proximity data corresponding to said detected position" – proximity detector automatically activates mode switch 46 depending on the proximity of the terminal to the user; moving the terminal closer to the user will cause the proximity

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detector to activate mode switch 46, thus setting electronic switch 50 to handset position and putting the terminal in handset mode; moving the terminal away from the user causes the opposite to occur, and the terminal is put in handsfree mode (column 4, line 51 to column 5, line 6: Figures 1 and 3);

“processing said [received user spoken utterance] with a selected signal processing technique based upon said proximity data” – to ensure good audio quality while the terminal is in handset mode with the terminal loosely or tightly coupled to the user's ear, or while the terminal is in handsfree mode, the output audio level as a function of frequency must be adjusted for each mode so as to fall within a certain range (column 5, lines 7 to 29: Figures 1 and 3); a transducer provides the user with a flat frequency response in handsfree mode; handset mode reduces the relative amplitudes of lower frequency components; in addition, appropriate amounts of amplification and electronic equalization may be employed to achieve the required output audio level over the desired frequency range in handset mode or in handsfree mode (column 5, lines 7 to 29: Figures 1 and 3).

Concerning independent claims 1 and 15, it is implicit that a wireless communication terminal of *Hawker et al. ('949)* provides for “receiving a user spoken utterance from an audio speech source”, but is directed to adjusting an output level of a transducer, where the transducer is a speaker audio output device, rather than adjusting an input level of a transducer, where the transducer is a microphone audio input device. Also, *Hawker et al. ('949)* omits “said signal processing technique distinguishing said user spoken utterance from background noise.” However, it is well known that

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transducers generically designate microphone audio input devices instead of speaker audio output devices.

*Uehara* teaches an analogous art method of inputting a voice through a microphone, where an ultrasonic sensor 30 is energized from a distance detecting circuit 32 to detect the distance to a person C entering the voice input area. (Column 3, Lines 20 to 32: Figure 2) Control of the direction of microphone 12 is accomplished according to positional information obtained by camera 22 and distance information detected by ultrasonic sensor 30. (Column 3, Lines 40 to 49: Figure 2) A microphone driving servomechanism 14 adjusts the direction of microphone 12 so that it corresponds to the calculated direction, and as a result, microphone 12 is directed toward person C and the speech from person C can be collected at a high S/N ratio. (Column 4, Lines 18 to 29: Figure 2) The microphone 12 is effectively directed toward the mouth of person C, thereby resulting in reliable collection of speech made by the person at a high S/N ratio. (Column 5, Lines 11 to 22: Figure 2) Thus, *Uehara* suggests processing signals to receive a user spoken utterance and to distinguish a user spoken utterance from background noise by adjusting the position of the microphone with respect to a calculated position of a mouth of a person C so as to achieve a high S/N ratio. The objective is to provide voice recognition technology so that a person's speech can be collected at a high S/N ratio without impairing the usefulness and operability of a voice input apparatus. (Column 1, Lines 50 to 63) It would have been obvious to one having ordinary skill in the art to incorporate the features of providing a signal processing technique for distinguishing a user spoken

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utterance from background noise as suggested by *Uehara* in a method of switching between handset and handsfree operational modes based upon proximity as taught by *Hawker et al.* ('949) for the purpose of collecting speech at a high S/N ratio without impairing the usefulness and operability of a voice input apparatus.

Concerning claims 2 and 16, *Hawker et al.* ('949) discloses a transducer provides the user with a flat frequency response in handsfree mode; handset mode reduces the relative amplitudes of lower frequency components; in addition, appropriate amounts of amplification and electronic equalization may be employed to achieve the required output audio level over the desired frequency range in handset mode or in handsfree mode (column 5, lines 7 to 29; Figures 1 and 3); thus, there are at least two signal processing techniques, respectively associated with handset mode and handsfree mode, and whether the proximity is near to or far from the user's ear.

Concerning claims 3, 8, 17, and 22, *Uehara* teaches a distance detecting circuit 32 to detect the distance to a person C entering the voice input area. (Column 3, Lines 20 to 32: Figure 2)

Concerning claims 6 and 20, *Uehara* teaches microphone driving servomechanism 14 is driven to adjust the direction of microphone 12 so that it corresponds to the calculated direction of the mouth of person C. (Column 4, Lines 22 to 28: Figure 2) Adjusting the direction of a microphone is equivalent to "altering an audio input beam."



6. Claims 4, 5, 18, and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Hawker et al.* ('949) in view of *Uehara* as applied to claims 1 and 15 above, and further in view of *Lichtblau*.

Neither *Hawker et al.* ('949) nor *Uehara* disclose a plurality of input transductive elements for determining a phase component and a common mode component of a user spoken utterance. However, it is known in the prior art to process an audio signal from a plurality of microphones so as to cancel noise by subtracting signal components between microphones and adjusting phase. Specifically, *Lichtblau* teaches an analogous art hearing aid to cancel sounds propagating through a hearing aid case with two microphones 520, 530 using a differential amplifier 523. A common mode rejection ratio of 100 passes one percent of the audio signal if both inputs are equal and has a gain of one for audio signals from only one microphone. (Column 7, Line 66 to Column 8, Line 50; Figures 4 and 5) The gain and phase of one microphone versus the second microphone could be adjusted to enhance cancellation. (Column 9, Lines 41 to 55: Figure 8) The objective is to discriminate between audio signals and noise signals to enhance noise cancellation. (Column 1, Lines 15 to 21; Column 5, Line 55 to Column 6, Line 9) It would have been obvious to one having ordinary skill in the art to utilize a plurality of microphones to determine a phase component and a common mode component of a user spoken utterance as taught by *Lichtblau* in the method and apparatus of inputting a voice through a microphone of *Uehara* for the purpose of discriminating between audio signals and noise signals to enhance noise cancellation.

***Allowable Subject Matter***

7. Claims 10 to 14 are allowed.
8. The following is a statement of reasons for the indication of allowable subject matter:

Regarding independent claim 10, and claims 11 to 14, dependent thereon, the prior art of record does not disclose or reasonably suggest the combination of audio circuitry to convert input audio signals from analog to digital format and processing both input audio signals and output audio signals using signal processing techniques based upon proximity data.

***Conclusion***

9. The prior art made of record and not relied upon is considered pertinent to Applicant's disclosure.

Hawker et al. ('284), Hawker et al. ('679), Immarco et al., Myllyla, Skorko, Franzen et al., Tasto et al., Van Schyndel, Peters, and Kantschuk disclose related art.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Martin Lerner whose telephone number is (703) 308-9064. The examiner can normally be reached on 8:30 AM to 6:00 PM Monday to Thursday.

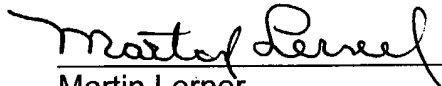
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richemond Dorvil can be reached on (703) 305-9645. The fax phone

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number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

ML  
9/1/04

  
Martin Lerner  
Examiner  
Group Art Unit 2654